

# Work Order ID 138583

Tuesday, November 03, 2015 11:44:19 AM

**\*138583\***

Page 1

Item ID: D4287-3 Accept **\*N900040100\*** Setup Start **\*NS1\***  
 Revision ID: Stop **\*NS2\***  
 Item Name: Uhmw U-Channel  
 Start Date: 11/3/2015 Start Qty: 40.00 **\*40\*** Cust Item ID:  
 Required Date: 11/3/2015 Req'd Qty: 40.00 **\*40\*** Customer:  
 Reference:

Approvals: Process Plan: MLJ Date: NOV 03 2015 Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start **\*NR1\***  
 QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop **\*NR2\***

| Sequence ID/<br>Work Center ID | Operation<br>Description | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

| Draw Nbr | Revision Nbr |
|----------|--------------|
| D4287    | A            |

100

0.00

**\*100\***

Purchasing

Purchasing

Memo

0.00

Issue P/O: 30366  
 Material: UHMW (white)  
 Supplier P#: McMaster-Carr 8672K31  
 Material release note required

CZ NOV 04 2015 40

110

Receive & Inspect for Damage & Mat'l Certs

0.00

**\*110\***

Packaging

Packaging

Memo

0.01

40 SP 15-11-7

120

QC6- Inspect dimensions to drawing

0.00

**\*120\***

QC

Quality Control

Memo

0.00

40

DAS  
38  
9-89

NOV 09 2015

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |
|--------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ |  | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> |  | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |  |  |                                                                                                                                                     |  |  |
| Date :                                                       |  | Step #:                                                                                                                                                                            |  | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  | MRB (QSI042) Approval<br><br><br>Completed By<br><br><br>Lead hand / Supervisor<br>Approval Verification<br><br><br>QC / QA Coordinator<br>Approval |  |  |
| Description Work Order Deviation                             |  |                                                                                                                                                                                    |  | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |                                                                                                                                                     |  |  |
|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |

| Root Cause                                  |                          |                       |                          | FAULT CATEGORY         |                          |                                   |                          |
|---------------------------------------------|--------------------------|-----------------------|--------------------------|------------------------|--------------------------|-----------------------------------|--------------------------|
| Environment <input type="checkbox"/>        | <input type="checkbox"/> | No Re-verification    | <input type="checkbox"/> | Pressure/Forced        | <input type="checkbox"/> | Temperature/Cure                  | <input type="checkbox"/> |
| Design <input type="checkbox"/>             | <input type="checkbox"/> | Operator              | <input type="checkbox"/> | Bending                | <input type="checkbox"/> | Set-up                            | <input type="checkbox"/> |
| Doc/Data <input type="checkbox"/>           | <input type="checkbox"/> | Offset/Setup          | <input type="checkbox"/> | Centre Not Concentric  | <input type="checkbox"/> | BOM/Route                         | <input type="checkbox"/> |
| Equip/Tooling <input type="checkbox"/>      | <input type="checkbox"/> | Supplier              | <input type="checkbox"/> | Cracks                 | <input type="checkbox"/> | Broken/Damage/Defect              | <input type="checkbox"/> |
| Handling/Pre <input type="checkbox"/>       | <input type="checkbox"/> | Training              | <input type="checkbox"/> | Crimp/Kink/Ripple/Wave | <input type="checkbox"/> | Inspection Incomplete/Unqualified | <input type="checkbox"/> |
| Material <input type="checkbox"/>           | <input type="checkbox"/> | Use for Testing       | <input type="checkbox"/> | Cuffs                  | <input type="checkbox"/> | Contamination                     | <input type="checkbox"/> |
| Internal Transport <input type="checkbox"/> | <input type="checkbox"/> | Poor Information      | <input type="checkbox"/> | Crushing               | <input type="checkbox"/> | Countersink                       | <input type="checkbox"/> |
| Tribal Knowledge <input type="checkbox"/>   | <input type="checkbox"/> | Rushing               | <input type="checkbox"/> | Heat Treat             | <input type="checkbox"/> | Cut Too Short                     | <input type="checkbox"/> |
| LOA <input type="checkbox"/>                | <input type="checkbox"/> | Product Improvement   | <input type="checkbox"/> | Wave/Twist in Tube     | <input type="checkbox"/> | Instructions Incomplete/Unclear   | <input type="checkbox"/> |
| Substation <input type="checkbox"/>         | <input type="checkbox"/> | Process Improvement   | <input type="checkbox"/> | Marks/Chatter          | <input type="checkbox"/> | Drill Holes                       | <input type="checkbox"/> |
| Past Expiry Date <input type="checkbox"/>   | <input type="checkbox"/> | Manufacturing Process | <input type="checkbox"/> | OTHER : _____          |                          |                                   |                          |
| Misidentified <input type="checkbox"/>      | <input type="checkbox"/> | Past Due              | <input type="checkbox"/> |                        |                          |                                   |                          |

**Work Order ID 138583****\*138583\***

Page 2

Tuesday, November 03, 2015 11:44:19 AM

Item ID: D4287-3

Accept

**\*N900040100\***

Setup Start

**\*NS1\***

Revision ID:

Stop

**\*NS2\***

Item Name: Uhmw U-Channel

Start Date: 11/3/2015 Start Qty: 40.00

**\*40\***

Cust Item ID:

Required Date: 11/3/2015 Req'd Qty: 40.00

**\*40\***

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start

**\*NR1\***

QC:

Date:

SPC (Y/N):

Date:

Stop

**\*NR2\***Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

130

Identify as per dwg & Stock Location: 814790 0.00**\*130\***

Packaging

Memo

0.01

Packaging

40x 18-11-7

140

QC21 - Final Inspection - Work Order Release

0.00

**\*140\***

QC

Memo

0.07

Quality Control

ML3

NOV 10 2015

SA 20151110

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |                                     |                                                                                                                                                                                    |                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |                                                                                                                                                     |  |  |                                    |                                     |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
|--------------------------------------------------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|--|------------------------------------|-------------------------------------|------------------------------------|--------------------------------------|------------------------------------|------------------------------------|--------------------------------------------|----------------------------------|----------------------------------------|------------------------------------|----------------------------------------------|--------------------------------|------------------------------------|------------------------------------|-----------------------------------|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ |                                     | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> |                                      | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><table style="width:100%; border: none;"> <tr> <td style="width:15%;">Skid-tube <input type="checkbox"/></td> <td style="width:15%;">Cross tube <input type="checkbox"/></td> <td style="width:15%;">Water Jet <input type="checkbox"/></td> <td style="width:15%;">Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table> |  |  |                                                                                                                                                     |  |  | Skid-tube <input type="checkbox"/> | Cross tube <input type="checkbox"/> | Water Jet <input type="checkbox"/> | Engineering <input type="checkbox"/> | Machining <input type="checkbox"/> | Small Fab <input type="checkbox"/> | Prod. Eng. Coord. <input type="checkbox"/> | Quality <input type="checkbox"/> | Thermoforming <input type="checkbox"/> | Finishing <input type="checkbox"/> | Rec/Store/Packaging <input type="checkbox"/> | Other <input type="checkbox"/> | Large Fab <input type="checkbox"/> | Composite <input type="checkbox"/> | Supplier <input type="checkbox"/> |  |
| Skid-tube <input type="checkbox"/>                           | Cross tube <input type="checkbox"/> | Water Jet <input type="checkbox"/>                                                                                                                                                 | Engineering <input type="checkbox"/> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |                                                                                                                                                     |  |  |                                    |                                     |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Machining <input type="checkbox"/>                           | Small Fab <input type="checkbox"/>  | Prod. Eng. Coord. <input type="checkbox"/>                                                                                                                                         | Quality <input type="checkbox"/>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |                                                                                                                                                     |  |  |                                    |                                     |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Thermoforming <input type="checkbox"/>                       | Finishing <input type="checkbox"/>  | Rec/Store/Packaging <input type="checkbox"/>                                                                                                                                       | Other <input type="checkbox"/>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |                                                                                                                                                     |  |  |                                    |                                     |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Large Fab <input type="checkbox"/>                           | Composite <input type="checkbox"/>  | Supplier <input type="checkbox"/>                                                                                                                                                  |                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |                                                                                                                                                     |  |  |                                    |                                     |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Date :                                                       |                                     | Step #:                                                                                                                                                                            |                                      | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  | MRB (QSI042) Approval<br><br><br>Completed By<br><br><br>Lead hand / Supervisor<br>Approval Verification<br><br><br>QC / QA Coordinator<br>Approval |  |  |                                    |                                     |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
| Description Work Order Deviation                             |                                     |                                                                                                                                                                                    |                                      | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |                                                                                                                                                     |  |  |                                    |                                     |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |
|                                                              |                                     |                                                                                                                                                                                    |                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |                                                                                                                                                     |  |  |                                    |                                     |                                    |                                      |                                    |                                    |                                            |                                  |                                        |                                    |                                              |                                |                                    |                                    |                                   |  |

| Root Cause                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                     |                                             |                                           | FAULT CATEGORY                                  |                                                            |                                                |                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------|-------------------------------------------|-------------------------------------------------|------------------------------------------------------------|------------------------------------------------|-----------------------------------------------|
| Environment <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Design <input type="checkbox"/>     | Doc/Data <input type="checkbox"/>           | Equip/Tooling <input type="checkbox"/>    | Pressure/Forced <input type="checkbox"/>        | Temperature/Cure <input type="checkbox"/>                  | Power Loss/Surge <input type="checkbox"/>      | Positioned Wrong <input type="checkbox"/>     |
| Handling/Pre <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Material <input type="checkbox"/>   | Internal Transport <input type="checkbox"/> | Tribal Knowledge <input type="checkbox"/> | Bending <input type="checkbox"/>                | Set-up <input type="checkbox"/>                            | Folio/Program <input type="checkbox"/>         | Outside Dimensions <input type="checkbox"/>   |
| LOA <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Substation <input type="checkbox"/> | Past Expiry Date <input type="checkbox"/>   | Misidentified <input type="checkbox"/>    | Centre Not Concentric <input type="checkbox"/>  | BOM/Route <input type="checkbox"/>                         | Grain <input type="checkbox"/>                 | Over/Under tolerance <input type="checkbox"/> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     |                                             |                                           | Cracks <input type="checkbox"/>                 | Broken/Damage/Defect <input type="checkbox"/>              | Weld <input type="checkbox"/>                  | Part Incorrect <input type="checkbox"/>       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     |                                             |                                           | Crimp/Kink/Ripple/Wave <input type="checkbox"/> | Inspection Incomplete/Unqualified <input type="checkbox"/> | Wrong Stock Pulled <input type="checkbox"/>    | Part Lost/Missing <input type="checkbox"/>    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     |                                             |                                           | Cuffs <input type="checkbox"/>                  | Contamination <input type="checkbox"/>                     | Out of Sequence <input type="checkbox"/>       | Part Moved <input type="checkbox"/>           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     |                                             |                                           | Crushing <input type="checkbox"/>               | Countersink <input type="checkbox"/>                       | Off-set <input type="checkbox"/>               | Drawing <input type="checkbox"/>              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     |                                             |                                           | Heat Treat <input type="checkbox"/>             | Cut Too Short <input type="checkbox"/>                     | Mislabeled <input type="checkbox"/>            | Finish <input type="checkbox"/>               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     |                                             |                                           | Wave/Twist in Tube <input type="checkbox"/>     | Instructions Incomplete/Unclear <input type="checkbox"/>   | Fit/Function <input type="checkbox"/>          | Misread <input type="checkbox"/>              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     |                                             |                                           | Marks/Chatter <input type="checkbox"/>          | Drill Holes <input type="checkbox"/>                       | Misaligned/off center <input type="checkbox"/> | Turning Sequence <input type="checkbox"/>     |
| No Re-verification <input type="checkbox"/><br>Operator <input type="checkbox"/><br>Offset/Setup <input type="checkbox"/><br>Supplier <input type="checkbox"/><br>Training <input type="checkbox"/><br>Use for Testing <input type="checkbox"/><br>Poor Information <input type="checkbox"/><br>Rushing <input type="checkbox"/><br>Product Improvement <input type="checkbox"/><br>Process Improvement <input type="checkbox"/><br>Manufacturing Process <input type="checkbox"/><br>Past Due <input type="checkbox"/> |                                     |                                             |                                           | OTHER : _____                                   |                                                            |                                                |                                               |

# Picklist Print

Tuesday, November 03, 2015 11:44:22 AM

Page 1

Work Order ID: 138583

**\*138583\***

Parent Item: D4287-3

**\*D4287-3\***

Parent Item Name: Uhmw U-Channel

Start Date: 11/3/2015

Required Date: 11/3/2015

Start Qty: 40.00

Required Qty: 40.00

Comments: IPP Rev:A 10.11.15 new issue DD Verf:EC

| Component Item ID/<br>Item Name | Replacement<br>Item ID | Mfg/<br>Purch | Bin<br>Item | Primary<br>Location | Last<br>Location | Route<br>Seq ID | Unit of<br>Measure | Qty on<br>Hand | Qty per Kit | Total<br>Qty | Qty<br>Issued | Date<br>Issued | Status |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|

8672K31

Purchased

No

110

f

0.0000

1

40

**\*8672K31\***

UHMW U-Channel

**\*\***

40 8015-117

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

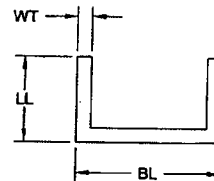
QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |
|--------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ |  | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> |  | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |  |  |                                                                                                                                                     |  |  |
| Date :                                                       |  | Step #:                                                                                                                                                                            |  | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  | MRB (QSI042) Approval<br><br><br>Completed By<br><br><br>Lead hand / Supervisor<br>Approval Verification<br><br><br>QC / QA Coordinator<br>Approval |  |  |
| Description Work Order Deviation                             |  |                                                                                                                                                                                    |  | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |                                                                                                                                                     |  |  |
|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |
|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |

| Root Cause                                  |                          |                       |                          | FAULT CATEGORY         |                          |                                   |                          |
|---------------------------------------------|--------------------------|-----------------------|--------------------------|------------------------|--------------------------|-----------------------------------|--------------------------|
| Environment <input type="checkbox"/>        | <input type="checkbox"/> | No Re-verification    | <input type="checkbox"/> | Pressure/Forced        | <input type="checkbox"/> | Temperature/Cure                  | <input type="checkbox"/> |
| Design <input type="checkbox"/>             | <input type="checkbox"/> | Operator              | <input type="checkbox"/> | Bending                | <input type="checkbox"/> | Set-up                            | <input type="checkbox"/> |
| Doc/Data <input type="checkbox"/>           | <input type="checkbox"/> | Offset/Setup          | <input type="checkbox"/> | Centre Not Concentric  | <input type="checkbox"/> | BOM/Route                         | <input type="checkbox"/> |
| Equip/Tooling <input type="checkbox"/>      | <input type="checkbox"/> | Supplier              | <input type="checkbox"/> | Cracks                 | <input type="checkbox"/> | Broken/Damage/Defect              | <input type="checkbox"/> |
| Handling/Pre <input type="checkbox"/>       | <input type="checkbox"/> | Training              | <input type="checkbox"/> | Crimp/Kink/Ripple/Wave | <input type="checkbox"/> | Inspection Incomplete/Unqualified | <input type="checkbox"/> |
| Material <input type="checkbox"/>           | <input type="checkbox"/> | Use for Testing       | <input type="checkbox"/> | Cuffs                  | <input type="checkbox"/> | Contamination                     | <input type="checkbox"/> |
| Internal Transport <input type="checkbox"/> | <input type="checkbox"/> | Poor Information      | <input type="checkbox"/> | Crushing               | <input type="checkbox"/> | Countersink                       | <input type="checkbox"/> |
| Tribal Knowledge <input type="checkbox"/>   | <input type="checkbox"/> | Rushing               | <input type="checkbox"/> | Heat Treat             | <input type="checkbox"/> | Cut Too Short                     | <input type="checkbox"/> |
| LOA <input type="checkbox"/>                | <input type="checkbox"/> | Product Improvement   | <input type="checkbox"/> | Wave/Twist in Tube     | <input type="checkbox"/> | Instructions Incomplete/Unclear   | <input type="checkbox"/> |
| Substation <input type="checkbox"/>         | <input type="checkbox"/> | Process Improvement   | <input type="checkbox"/> | Marks/Chatter          | <input type="checkbox"/> | Drill Holes                       | <input type="checkbox"/> |
| Past Expiry Date <input type="checkbox"/>   | <input type="checkbox"/> | Manufacturing Process | <input type="checkbox"/> | OTHER :                |                          |                                   |                          |
| Misidentified <input type="checkbox"/>      | <input type="checkbox"/> | Past Due              | <input type="checkbox"/> |                        |                          |                                   |                          |

# SPECIFICATION CONTROL DRAWING



SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 138583-MCS

15-11-03

## D4287-X UHMW U-CHANNEL

| DART PART NUMBER | POSSIBLE SUPPLIER | SUPPLIER PART NUMBER | MATERIAL     | PURCHASED LENGTH | BASE LENGTH (BL) | LEG LENGTH (LL) | WALL THICKNESS (WT) | WEIGHT (lbs) |
|------------------|-------------------|----------------------|--------------|------------------|------------------|-----------------|---------------------|--------------|
| D4287-1          | McMASTER-CARR     | 9928K53              | UHMW (WHITE) | 96.0             | 1.05             | 0.75            | 0.250               | 2.11         |
| D4287-3          | McMASTER-CARR     | 8672K31              | UHMW (WHITE) | 96.0             | 1.25             | 0.75            | 0.125               | 1.29         |

RELEASED  
2010-11-03

### NOTES:

- 1) MATERIAL: PURCHASE PER TABLE OR UHMW BLACK TIVAR 1000 VIRGIN MATERIAL REF. DART SPEC. MUHMW
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: NONE
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: PER TABLE

| REV.       | NEW ISSUE | DESCRIPTION | MB | 10.10.26 |
|------------|-----------|-------------|----|----------|
| DESIGN     |           |             | BY | DATE     |
| DRAWN      |           |             |    |          |
| CHECKED    |           |             |    |          |
| MFG. APPR. |           |             |    |          |
| APPROVED   |           |             |    |          |
| DE APPR.   |           |             |    |          |
| DATE       | 10.10.26  |             |    |          |

**DART AEROSPACE LTD**  
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. DSC-D4287 REV. A  
TITLE UHMW U-CHANNEL SCALE NTS  
SHEET 1 OF 1

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Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
Tel: 613 632 9577  
Fax: 613 632 1053

## PURCHASE ORDER

Purchase Order ID **PO30366**

Purchase Order Date 11/4/2015

PO Print Date 11/4/2015

Page Number 1 of 6

**Order From :**

MCMaster-CARR SUPPLY CO,  
P.O. BOX 7690  
CHICAGO, IL 60680-7690  
US

VU-MCM001

**Ship To :** DART AEROSPACE LTD

1270 ABERDEEN  
HAWKESBURY, ON K6A 1K7  
CANADA

**FAXED**

**Contact Name**

**Vendor Phone** 330 995 5500

**Ship To Contact**

**Ship To Phone**

**Ship Via:** Purolator ground ppd

**Ship Acct:**

**Buyer**

Chantal Lavoie

**Customer POID**

**Customer Tax #**

10127-2607

**Terms**

Net 10

**Currency**

USD

**FOB**

FCA - (Free Carrier)

| Line Nbr | Reference<br>Vendor Part Number<br>Line Comments<br>Delivery Comments | Description/<br>Mfg ID | Req Date/<br>Taxable<br>Promise Date | CD | Req Qty/<br>Unit of<br>Measure | PO Unit Price      | Extended<br>Price |
|----------|-----------------------------------------------------------------------|------------------------|--------------------------------------|----|--------------------------------|--------------------|-------------------|
| 1        | 98470A133<br><br>AS PER DWG D4811 REV. A<br>B138584                   | Pin, Quick Release     | 11/6/2015<br>Yes<br>11/6/2015        |    | 10.00<br>Each                  | \$3.01             | \$30.10           |
|          |                                                                       |                        |                                      |    |                                | <b>Line Total:</b> | <b>\$30.10</b>    |
| 2        | 9928K53<br><br>AS PER DWG D4287 REV. A<br>B138585                     | UHMW U-Channel         | 11/6/2015<br>Yes<br>11/6/2015        |    | 40.00<br>f                     | \$2.28             | \$91.20           |
|          |                                                                       |                        |                                      |    |                                | <b>Line Total:</b> | <b>\$91.20</b>    |
| 3        | 8672K31<br><br>AS PER DWG D4287 REV. A<br>B138583                     | UHMW U-Channel         | 11/6/2015<br>Yes<br>11/6/2015        |    | 40.00<br>f                     | \$3.26             | \$130.40          |

Note:

SP15-11-7

11/4/2015





# Packing List

200 Aurora Industrial Pkwy  
Aurora OH 44202-8087  
330-995-5500  
cle.sales@mcmaster.com

Dart Aerospace Ltd  
1270 Aberdeen St  
Hawkesbury ON K6H 1K7  
Canada  
Attention: Jean-Luc  
Eric L

Purchase Order  
PO30366

Order Placed By  
Chantal Lavole

McMaster-Carr Number  
2957619-01

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11/04/2015

| Line | Product                                                                               | Ordered    | Shipped |
|------|---------------------------------------------------------------------------------------|------------|---------|
| 2    | 9928K53 Impact-Resistant UHMW Polyethylene U-Channel, 1" Base X 3/4" Legs, 1/4" Thick | 40<br>Feet | 40      |

Shipped separately from our Cleveland warehouse on 11/04

|    |                                                                                                                            |            |    |
|----|----------------------------------------------------------------------------------------------------------------------------|------------|----|
| 1  | 98470A133 18-8 Stainless Steel Shoulder-Style Quick-Release Pin, Ring Grip, 1/4" Diameter, 1.3" Usable Length              | 10<br>Each | 10 |
| 3  | 8672K31 UHMW Polyethylene Trim, Screw Mount, U-Shape, 1" Inside Width                                                      | 40<br>Feet | 40 |
| 4  | 2841A61 Carbide Small-Diameter Drill Bit with 1/8" Shank, #5, 1-1/2" Overall Length, .39" Drill Depth                      | 5<br>Each  | 5  |
| 5  | 7077A38 1/4" Shank-Mount Light Cleaning Brush for Stainless Steel and Aluminum, 3" Brush Diameter, 0.010" Bristle Diameter | 6<br>Each  | 6  |
| 6  | 6383K47 Steel Ball Bearing, Plain Open for 5/8" Shaft Diameter, 1-1/2" OD, 7/16" W                                         | 6<br>Each  | 6  |
| 7  | 6383K57 Steel Ball Bearing, Plain Open for 1" Shaft Diameter, 2" OD, 1/2" Width                                            | 4<br>Each  | 4  |
| 8  | 2737T9 Finished-Bore Sprocket for ANSI Roller Chain, for #25 Chain, 1/4" Pitch, 17 Teeth, 1/4" Bore                        | 3<br>Each  | 3  |
| 9  | 6793K22 Steel Machinable-Bore Sprocket, for ANSI No. 25 Roller Chain, 1/4" Pitch, 45 Teeth                                 | 2<br>Each  | 2  |
| 10 | 98535A440 Spring Steel Standard Key Stock, 3/16" X 3/16", 36" Length                                                       | 1<br>Each  | 1  |
| 11 | 6261K171 Roller Chain, ANSI No. 25, 1/4" Pitch, 3' Long                                                                    | 2<br>Each  | 2  |
| 12 | 6261K108 Connecting Link for ANSI No. 25, Roller Chain                                                                     | 2<br>Each  | 2  |
| 13 | 57545K427 10 Pitch Worm for 14-1/2 Degree Pressure Angle, Speed-Reducing Worm Gear for 90 Degree Transfer                  | 1<br>Each  | 1  |

SP15-11-7

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# ORIGINAL COMMERCIAL INVOICE CERTIFICATE OF ORIGIN

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